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PUBLIC HEALTH REPORTS

VOL. 30 AUGUST 20, 1915 No. 34

THE TRACHOMA PROBLEM.[1]

By J. W. KERR, Assistant Surgeon General, United States Public Health Service.

On account of the increasing number of trachoma cases that had been applying for treatment at dispensaries in eastern cities of the United States prior to 1897, the American Ophthalmological Society by resolution urged that immediate steps be taken by the Government to prevent further importations of what was then considered essentially an exotic disease. Accordingly, the Surgeon General of the Public Health Service in an official communication of October 30, 1897, called attention to the communicability of the disease, and as a result it was classified as "dangerous contagious" within the meaning of the immigration law of 1891.

Beginning of Exclusion of Aliens Having Trachoma.

During the last 17 years, therefore, arriving aliens have been carefully examined to detect trachoma cases with the view to their exclusion. The total number of immigrants examined during the 10 years ended June 30, 1914, and the total number of trachoma cases discovered are shown in the following table:

TABLE I.—*Trachoma among arriving aliens for 10 years ended June 30, 1914.*

Year.	Aliens examined.	Trachoma cases.	Per cent trachoma.	Year.	Aliens examined.	Trachoma cases.	Per cent trachoma.
1905	1,026,499	1,172+	....	1911	1,093,809	2,504	....
1906	1,175,000	1,600+	....	1912	1,143,234	1,906	....
1907	1,285,349	2,167+	....	1913	1,574,371	2,704	....
1908	935,597	2,074	....	1914	1,485,957	3,051	....
1909	966,124	2,586	....				
1910	1,280,957	3,220	....		11,966,897	22,984+	0.19

At domestic ports within that 10-year period there have been examined a total of 11,966,897 aliens, among whom 22,984+ had trachoma. Inasmuch as official and unofficial inspections were constantly maintained also at foreign ports to prevent the embarkation of diseased aliens, many times greater numbers were undoubtedly prevented from coming at all. During the fiscal year ended June 30, 1906, for instance, 29,600 cases of the disease were prevented from embarking at foreign ports.

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[1] Read at the Seventh Pan-American Medical Congress, San Francisco, Cal., June 18, 1915.

By reason of the measures taken many foci of the disease were undoubtedly prevented, and for some years it was felt that the trachoma problem, which had been assumed to be essentially dependent on immigration, was decreasing. In fact, statistics compiled by Davies, of New York, indicated that, whereas prior to 1897 the percentage of trachoma in half a million cases of eye diseases investigated was 4 per cent, within three years after the restrictive measures mentioned only a little over 2 per cent of nearly 100,000 cases compiled were trachomatous.

Impressed with the importance of excluding trachoma cases, and the reduction that could be effected, the Canadian Government likewise inaugurated restrictive measures, although for some years these were not as far-reaching as were those of the United States, since some old cases of trachoma were occasionally permitted to go to the great rural sections of the Northwest.

On the assumption that it is easier for American Republics to prevent trachoma than to cure it, the question of the desirability of concerted action to exclude the disease at ports of entry was taken up with Mexico in 1906 by the United States Government. The existence of the disease was also made a subject of report by the several delegates to the Third International Sanitary Conference of the American Republics held in Mexico City, December 2-7, 1907, and by resolution it was recommended to the several participating Governments to exclude aliens afflicted with trachoma.

Prevalence of Trachoma in Some of the American Republics.

In his presidential address before this conference, Liceaga stated that in Mexico trachoma had theretofore been known only to oculists. Cruz, of Brazil, reported the occurrence of the disease among immigrants in some localities of the State of Sao Paulo. From the report of Guiteras, presumably trachoma then prevailed in Cuba and was an excludable disease according to the immigration laws. According to Esteves, the delegate from Ecuador, trachoma was unknown in that country. Ortega and Azurdia, of Guatemala, likewise reported that the existence of the disease had not been demonstrated in that Republic, and Arriaga said it was entirely unknown in Honduras. In Salvador, according to Gonzalez, not a single case of trachoma had been encountered.

At the Fifth International Sanitary Conference held in Santiago, Chile, November, 1911, trachoma was again made a subject for discussion. Alfaro and Alvarez reported that in Argentina trachoma was a rare disease and not allowed to enter the country. The

Chilean delegate said the disease was imported into Chile in 1881, and that the percentage of trachoma patients in the total number of cases treated in the infirmaries of Santiago had increased from 0.5 per cent in 1895 to an average of 3.1 per cent for 11 years. In Uruguay, according to Fernandez, Espiro, and Oliver, trachoma occurs with some frequency. In Venezuela, on the other hand, as stated by Ortiz and Razetti, the disease is very seldom seen.

From the foregoing, it would appear that in at least 12 American Republics trachoma up to 1911 had attracted very little or no public-health attention except as an exotic disease to be prevented from entry. In the United States, however, foci of the disease which had been known to exist, especially on the Ohio River watershed, were found to be presenting a public-health problem of increasing importance. It was becoming apparent, also, that trachoma was prevailing unduly among the Indians.

Prevalence of Trachoma in the United States.

In order to ascertain the prevalence of the disease in our Appalachian Mountains, in 1912 McMullen examined 3,974 persons in Knott, Perry, Leslie, Breathitt, Lee, Owsley, and Clark Counties, Ky., of whom 500, or 12.5 per cent, were found to have trachoma. Since that time, like examinations have been made in 23 other counties of that State.

Examinations have also been made in counties in 12 other States and in sections of Alaska, Porto Rico, and the Philippines. The following table shows the States and Territories where these examinations were conducted between July 1, 1912, and April 30, 1915, the classes of the population examined, the number of schools visited, the numbers examined, the number of cases of trachoma found, and the percentage of infection among those examined:

TABLE II.—*Trachoma among white and colored persons examined, July 1, 1912, to Apr. 30, 1915.*

State or Territory.	County, town, or section.	Class examined.	Number examined.	Cases of trachoma.	Per cent of infection.	Schools examined.
Alabama	Tuscaloosa County	School children and prisoners.	2,759	65	1.3	12
Alaska	Southeastern section	Natives	2,494	49?	2.0	....
Arizona	Douglas	School children	2,417	73	3.0	10
California	Tulare County	....do	1,478	5	.33	12
Florida	Manatee County	....do	1,684	70	4.1	25
Indiana	Bartholomew County.	....do	3,969	48	1.2	83
	Porter County	....do	2,488	7	.28	76
Georgia	Northern counties (25).	....do	7,855	7	.08	84
Kentucky	Blue-grass section, 8 counties.	Adults and school children.	8,815	246	2.78	26
	Mountain section, 20 counties.	....do	12,276	920	7.50	234+
	Jefferson County	School children	35,297	805	2.25	239
Minnesota	Various representative sections.	School children and miners.	39,164	24	.06	120
North Carolina	Mountain counties	School children and mill workers.	12,021	33	.27	84

TABLE II.—*Trachoma among white and colored persons examined, July 1, 1912, to Apr. 30, 1915*—Continued.

State or Territory.	County, town, or section.	Class examined.	Number examined.	Cases of trachoma.	Per cent of infection.	Schools examined.
Ohio	Youngstown	Mill workers	5,962	76	1.3	....
Porto Rico	Various sections	School children mostly.	4,202	401	9.5	19
South Carolina	Mountain and lowland section.	School children and mill workers.	4,308	1	.02	36
Tennessee	Mountain counties (31).	School children mostly.	16,950	341	2.01	130
Virginia	Mountain counties (10).	.....do	7,801	103	1.38	68
West Virginia	Mountain and hill counties (23).	.....do	20,848	340	1.63	131
			192,788	3,619	....	1,389+

Within a period of three years, therefore, there were examined a total of 192,788 white and colored persons in 16 different States and Territories. Practically all of this number were school children and 3,619 had trachoma.

Within the same period 39,231 Indians were also examined in 24 States, this work having been done in compliance with an act of Congress approved August 24, 1912. Table III gives by States the location of these Indians, the number of cases of trachoma found, and the percentage of those infected.

TABLE III.—*Trachoma among Indians examined, Sept. 28, 1912, to Dec. 30, 1912.*

State.	Number examined.	Number of cases.	Per cent of trachoma.	State.	Number examined.	Number of cases.	Per cent of trachoma.
Arizona	5,873	1,459	24.9	North Carolina	317	23	7
California	1,555	238	15.3	North Dakota	3,447	791	22.94
Colorado	262	41	15.64	Oklahoma	3,252	2,235	68.72
Florida	22	....	....	Oregon	904	94	10.4
Idaho	526	84	15.96	Pennsylvania	552	76	13.76
Iowa	53	17	32.04	South Dakota	6,121	1,059	17.24
Kansas	834	176	21.1	Utah	182	75	39
Michigan	643	48	7.46	Virginia	43	13	30.2
Minnesota	3,542	533	15.05	Washington	1,347	180	13.35
Montana	2,042	537	26.3	Wisconsin	2,999	207	6.86
Nebraska	322	130	41	Wyoming	392	199	51
Nevada	851	229	26.9				
New Mexico	2,207	494	22.38	Total	39,231	8,940	22.7
New York	943	2	.2				

From the above data it is evident that trachoma prevails among some portions of the population in at least 34 States of the Union. Among the Indians, 22.7 per cent of 39,231 examined were afflicted. Among the mountains of Kentucky approximately 8 per cent of 12,276 examined were trachomatous.

Based on these figures McMullen has estimated that there are at present 33,000 cases of this communicable eye disease in the 35 mountain counties of eastern Kentucky. There is reason to believe that the disease is as prevalent in some mountain sections of Tennessee, Virginia, and West Virginia.

The incidence of the disease among the Indians in certain sections is even more striking. Out of a total of 3,252 examined indiscriminately in Oklahoma, 68.72 per cent were afflicted. It may be concluded, therefore, that in the United States a serious situation exists.

Since the greatest prevalence occurs in inland regions and among native-born Americans, especially Indians, and since Mexico and Central and South American countries have large numbers of this latter class among their populations, it is difficult to see why the disease should not be more prevalent in those countries. That it does prevail to some extent in Mexico is shown by the following figures giving the number of trachoma cases discovered from July 1, 1910, to June 30, 1914, as a result of the medical inspection of immigrants on the Mexican frontier:

TABLE IV.—*Trachoma among aliens examined on the Mexican frontier, July 1, 1910, to June 30, 1914.*

Year.	Total number of aliens examined.	Trachoma cases found.	Per cent.
1910	76,318	58	....
1911	60,562	114	....
1912	78,049	146	....
1913	80,358	358	....
1914	59,544	240	....
Total	354,831	916	0.257

[1] It is probable that the cases of trachoma discovered may have been among nationalities other than Mexican.

During the five years ended June 30, 1914, 354,831 aliens were thus examined and 916 cases of trachoma discovered. This represents 0.257 per cent of the total examined.

In view of the demonstrated prevalence of trachoma, its chronicity, and marked resistence to treatment, the control of the disease is a serious problem in the United States.

The Control of the Disease.

The measures to be taken must have a twofold object, viz, the elimination of foci of the disease and the improvement of community sanitation. Trachoma is largely a disease of insanitary surroundings, and their abolishment will depend in great measure on improving the social and economic conditions in infected communities. The bringing about of these improvements and the education of children in individual prophylaxis are essentials to success. Not only should children be taught, but they should be examined regularly in schools in order that their health and vision may be safeguarded.

The care of the individual case is largely a surgical matter, and treatment and instruction had best be begun in a hospital.

Preventive Measures in the Appalachian Mountains.

In order to combat trachoma in the Appalachian Mountains, therefore, steps were taken to put these principles into effect. One hospital each was established at Hindman, Ky., September 4, 1913, Hyden, Ky., September 24, 1913, and Jackson, Ky., March 24, 1914, and one is being established at Coeburn, Va., a fifth to be opened later in the mountains of West Virginia. These hospitals are located in converted dwelling houses, and are purposely inexpensive as to equipment and maintenance in order to demonstrate that such institutions can be operated annually for a sum any county should be able to raise. The total cost is about $7,000 for each hospital annually. At least two counties have already undertaken to carry on such work.

Since their opening, the three Government hospitals in Kentucky have been available to the population of an area covering more than 10,000 square miles. In the 17 months that they have been open, i. e., to May 1, 1915, a total of 1,437 cases of trachoma have been treated. These patients have been given a total of 18,860 treatments, and 1,823 operations were performed, many of them under general anesthesia. As a result, a fair proportion of cases have already been cured and over a thousand foci of infection prevented.

In order to give instruction regarding the prevention of trachoma, educational bulletins have been sent to 12,079 households in the counties operated in. A total of 120 public-health lectures have been presented before audiences in the mountains and other infected counties, and visits for purposes of instruction were made to 677 mountain homes.

By such means may the trachoma problem be met in infected communities. In any event, however, the process of elimination of the disease will be prolonged—probably for years—but antitrachoma work will be beneficent in preventing other diseases, and eventually trachoma itself must yield to thorough scientific methods.

PUBLIC HEALTH ADMINISTRATION IN CHICAGO, ILL.

A STUDY OF THE ORGANIZATION AND ADMINISTRATION OF THE CITY HEALTH DEPARTMENT.[1]

By J. C. PERRY, Senior Surgeon, United States Public Health Service.

At the request of the commissioner of health, the efficiency division of the Chicago civil-service commission recently commenced a critical study of the city's health department. Before much progress had been made, however, the desirability of having the assistance of one

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[1] This study was conducted during the period from December, 1914, to April, 1915.